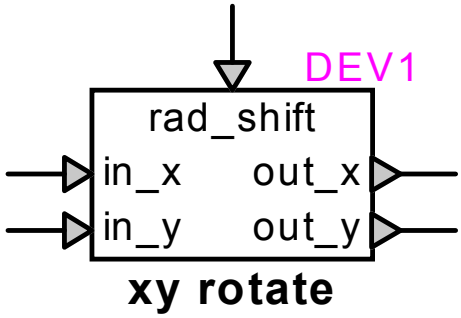
Phasor operation : (x,y) rotate



1 Description

This device rotates a vector or phasor represented by its (x,y) coordinates.

1.1 Pins

This device has five pins:

pin	*type*	*description*	*units*
in_x	input pin	input x-coordinate	any
in_y	input pin	input y-coordinate	same as in_x
rad_shift	input pin	rotation angle	rad
out_x	output pin	output x-coordinate	same as in_x
out_y	output pin	output y-coordinate	same as in_x

1.2 Parameters

No parameters are required for this device.

1.3 Input

The input pins may be connected to any control signals.

1.4 Output

The outputs are the (x,y) coordinates of the input vector rotated by a variable angle.
The operation is immediate, and is calculated as follows:

$$\text{out\_x} = \cos(\theta)\cdot\text{in\_x} - \sin(\theta)\cdot\text{in\_y}$$
$$\text{out\_y} = \sin(\theta)\cdot\text{in\_x} + \cos(\theta)\cdot\text{in\_y} \qquad (1)$$

where θ is the rotation angle